

REMARKS

Claims 17-26 are pending; claims 24-26 are withdrawn and claims 17-23 are rejected in this application. Claim 17 is amended hereby.

Responsive to the rejection of claim 17-20 and 23 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 4,771,197 (Ivanto et al.) in view of U.S. Patent No. 4,574,210 (Wieland), Applicant has amended claim 17 and submits that claims 17-20 and 23 are now in condition for allowance.

Ivanto et al. disclose a frequency converter-controlled squirrel cage motor (Fig. 1) including an axle 4 that is stationary. Axle 4 is fixed to stands 12, which conduct the support loads to the motor mounting base. On axle 4, stator 3 is integrally mounted and electrical leads 7 coming to stator 3 run through a cable entry 6 provided in axle 4. A cylinder 1 is rotatably carried on stationary axle 4 by way of end plates 13 and bearings 5 (column 1, line 62 through column 2, line 5).

Wieland discloses an external rotor motor having a cooling system (Fig. 6) which provides for interior forced air currents. Motor 510 has a hollow shaft 511 rotatably mounting rotor 514 by bearings 522. An end plate 519 has radially extending vanes 564. Rotor 514 has a plurality of longitudinal tubular passages 570. Shaft 511 has a hollow interior 532 which is closed off by end closures 560 and 562. Shaft 511 has, adjacent the ends of stator 512, apertures 566 and 568, which communicate the interior 532 to radially extending gaps 572 and 574 between stator 512 and the front and rear plates 518 and 519. Gaps 572 and 574 communicate with the interior 554 by way of tubular passages 570 (column 4, lines 36-49). Weiland teaches that the rotor forms with the shaft a sealed interior in which the windings of the stator and rotor are placed (column 1, lines 38-40). Heat that is generated within stator 12 is transferred through shaft 11 to hollow interior 26 (column 3, lines 16 and 17). The method of Weiland produces a cooling affect without

external air flowing through the shaft by use of a heat pipe mechanism (column 4, lines 1-3). In addition to the text of the specification teaching that the interior is sealed from external air, each of the figures that have an indication of airflow show that the external air and the internal air are not mixed, nor are they in fluid communication (Figs. 1-6).

In contrast, claim 17 as amended, recites in part:

said hollow short circuit conductors being in fluid communication with an external airflow source by way of the hollow portion of said hollow non-rotary shaft.

(Emphasis added). Applicant submits that such an invention is neither taught, disclosed nor suggested by Ivanto et al., Wieland or any of the other cited references, alone or in combination and includes distinct advantages thereover.

Ivanto et al. disclose a frequency converter-controlled squirrel cage motor having a cylinder that is rotatably carried on a stationary axle. Wieland teaches an external rotor motor having a cooling system that has a sealed interior in which the windings of the stator and rotor are placed. The combination of the two references result in a cooled motor that is cooled without the flow of an external air source being admitted throughout the interior of the motor. It is the sealed interior resulting from the teachings of the cited references that is contrary to the invention of the Applicant. Applicant's invention includes a hollow non-rotating shaft that is a conduit for an airflow that passes into the interior of the motor including the hollow short circuit conductors that are in the interior of Applicant's invention. This limitation of Applicant's invention, added by this amendment is supported at page 9, line 20 through page 10, line 6 and in Fig. 1 there is the illustration of the airflow X flowing into an end of the hollow rotor shaft the air continuing to flow through a hole in the shaft and the airflow continuing to flow through the hollow short circuit conductors and then the air rejoins the air flowing through the hollow rotor shaft that then exits the motor. Therefore, Ivanto et al., Wieland and any of the other cited references, alone or in

combination, fail to disclose, teach or suggest hollow short circuit conductors being in fluid

communication with an external airflow source by way of the hollow portion of the hollow non-rotary shaft, as recited in claim 17.

An advantage of Applicant's invention is that an airflow is routed from an external source in a parallel manner through both the hollow rotary shaft and the hollow short circuit conductors. This allows an increase in the maximum output of the motor and allows the air to directly cool the motor without requiring the heat to be transferred through an intervening structure. Another advantage of the present invention is that it allows for an increased number of starts and stops of the motor. For the foregoing reasons, Applicant submits that claim 17, and claims 18-20 and 23 depending therefrom, are now in condition for allowance, which is hereby respectfully requested.

Claims 21 and 22 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over Ivanto et al. in view of Wieland and in further view of U.S. Patent No. 4,761,602 (Leibovich). However, claims 21 and 22 depend from claim 17, which is in condition for allowance for the reasons given above. Accordingly, Applicant submits that claims 21 and 22 are now in condition for allowance, which is hereby respectfully requested.

For the foregoing reasons, Applicant submits that no combination of the cited references teaches, discloses or suggests the subject matter of the amended claims. The pending claims are therefore in condition for allowance, and Applicant respectfully requests withdrawal of all rejections and allowance of the claims.

In the event Applicant has overlooked the need for an extension of time, an additional extension of time, payment of fee, or additional payment of fee, Applicant hereby conditionally petitions therefor and authorizes that any charges be made to Deposit Account No. 20-0095, TAYLOR & AUST, P.C.

Should any question concerning any of the foregoing arise, the Examiner is invited to telephone the undersigned at (260) 897-3400.

Respectfully submitted,

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